

LIST OF BIRDS COLLECTED BY CAPTAIN F. BABINGTON PEILE
IN CASHMERE DURING THE SUMMER OF 1887, AND PRESENTED BY HIM
TO THE
BOMBAY NATURAL HISTORY SOCIETY.

Jerdon's No.	Scientific Name.	English Name.	No. of Specimens.
121	<i>Merops apiaster</i> , <i>Lin</i>	The European Bee-eater ...	3
125	<i>Coracias garrula</i> , <i>Lin</i>	The European Roller	2
134 bis.	<i>Alcedo ispida</i> , <i>Lin</i>	The European King-fisher	4
150	<i>Palæornis schisticeps</i> , <i>Hodgs</i>	The Slaty-headed Paroquet.	1
154	<i>Picus himalayanus</i> , <i>Jard</i>	The Himalayan Pied Woodpecker.	1
199	<i>Cuculus canorus</i> , <i>Lin</i>	The Cuckoo	1
254	<i>Upupa epops</i> , <i>Lin</i>	The European Hoopee	1
273	<i>Pericrocotus brevirostris</i> <i>Vig</i>	The Short-billed Minivet ...	1
280	<i>Buchanga longicaudatus</i> , <i>Hay</i>	The Long-tailed King-Crow.	2
288	<i>Muscipeta paradisi</i> , <i>Lin</i>	The Paradise Flycatcher ...	9
353	<i>Petrophila cinclorhynchus</i> , <i>Vig</i>	The Blue-headed Chat Thrush.	2
444	<i>Hypsipetes psaroides</i> , <i>Vig</i>	The Himalayan Black Bulbul.	1
470	<i>Oriolus kundoo</i> , <i>Sykes</i>	The Indian Oriole	4
483	<i>Pratincola indicus</i> , <i>Bly</i>	The Indian Stonechat	2
505	<i>Rhyacornis fuliginosus</i> , <i>Vig</i>	The Plumbeous Water-Robin	1
665	<i>Corvus monedula</i> , <i>Lin</i>	The Jackdaw	1
667	<i>Nucifraga multipunctata</i> , <i>Gould</i> ...	The Many-spotted Nutteraker.	1
672	<i>Urocissa flavirostris</i> , <i>Bly</i>	The Yellow-billed Blue Magpie.	2
748	<i>Calacanthis burtoni</i> , <i>Gould</i>	The Crimson-browed Finch.	2
792	<i>Turtur Pulchratus</i> , <i>Hodgs</i>	The Turtle Dove.....	1
804	<i>Lophophorus impeyanus</i> , <i>Lath</i>	The Monaul	3
808	<i>Pucrasia macrolopha</i> , <i>Less</i>	The Puckrass	1
901	<i>Hydrophasianus Chirurgus</i> , <i>Scop</i> ...	The Pheasant-tailed Jacana.	1
911	<i>Porzana fusca</i> , <i>Lin</i>	The Ruddy Rail	1
937	<i>Nycticorax griseus</i> , <i>Lin</i>	The Night Heron	1
984	<i>Hydrochelidon hybrida</i> , <i>Pull</i>	The Marsh Tern	1

THE POISONOUS SNAKES OF THE BOMBAY
PRESIDENCY.

By H. M. PHIPSON, C.M.Z.S., Hon. Sec.

(Read at the Society's Meeting on 5th September 1887.)

A FORTNIGHT ago one of our local newspapers stated that there were not more than three, or perhaps four, poisonous snakes in the Bombay Presidency. I felt that we ought not to allow such a statement to pass unchallenged, especially as our own collection furnished evidence that nine poisonous snakes, at least, are to be found in the Presidency, and that, according to the greatest authority on the subject, Dr. Gunther, a tenth, which we have not as yet obtained, is

an inhabitant of the Deccan. I consequently gave the *Times of India* a list of the poisonous snakes in our possession, all of which had been killed in this Presidency; a list which, I think, reflects great credit on this Society, when the short time during which the collection has been got together is taken into consideration. Some of the measurements we were able to give have already attracted the notice of the press in other parts of India, and I therefore think it would be of interest to the members present, if I were to draw their attention to the specimens we possess of these particular snakes. We have, you will observe, specimens of the following poisonous snakes, all of which were killed in this Presidency:—

Colubrine.—1. *Ophiophagus elaps*. 2. *Naga tripudians*. 3. *Bungarus arcuatus*. 4. *Callophis trimaculatus*. 5. *Callophis nigrescens*.

Viperine.—6. *Daboia elegans*. 7. *Echis carinata*. 8. *Trimeresurus anamallensis*. 9. *Hypnale nepa*.

1. We will take, first, the great Colubrine snake, the *Ophiophagus elaps*, the "Hamadryad" or "King Cobra," which is probably the largest poisonous snake in the world. I say probably, as there is one in New Guinea, *Lachesis mutus*, a viperine snake belonging to the Urothalidæ, which is said to reach 14 feet in length. Fortunately, the Hamadryad is not very common. Dr. Gunther, the well-known ophiologist, says that the Hamadryad is found in all parts of the Indian Continent, in the Andamans (where, I hear, it is eaten by the natives), the Philippines, Java, Sumatra and Borneo. As its name implies, it feeds principally on snakes and other reptiles. Owing to the fact of its expanding a "hood" it is frequently mistaken for a cobra, but, as you will see by comparing the specimens before you, the plates or shields on the head of the Hamadryad differ materially from those of the cobra. According to Sir Joseph Fayrer, the natives of Bengal call it the "Sunkherchor," a "breaker of shells," but he gives no explanation of this name. The snake-men about here do not appear to know the Hamadryad, but it is, undoubtedly, an inhabitant of this Presidency. We have received a skin of one from Carwar measuring 12 feet 6 inches, and another from the Goanese Ghauts which is 15 feet 5 inches in length. Major Beddome, of Madras, says he has killed one nearly 14 feet near Cuttack in Bengal, where it is common. A few years ago one was caught in the Konkan by Mr. Bulkley, who tried to take it to England alive, so we have ample proof of its occurring in this part of India.

2. *Naga tripudians*, the Cobra, is too well known to need description. It is found all over India up to 8,000 feet in the Himalayas. There are a great number of varieties, differing in colour and markings, many of which are, you will see, figured in Sir Joseph Fayrer's *Thanatophidia of India*. The natives, who give separate names to these varieties, maintain that they are distinct species, and that they differ considerably, not only in appearance, but in their habits. The natives are, I need hardly say, profoundly ignorant in such matters.

For instance, many of them insist that all the hooded cobras are females, and that the male has no hood and is harmless. Their "male cobra" is nothing more than the common Dhâman (*Ptyas mucosus*), the Indian Rat Snake. They also state, in support of their theory, that the Dhâman is proof against the poison of the cobra, but this has been shown over and over again not to be the case. The cobra lays from twelve to twenty eggs, once a year, during the rains, and the young show signs of their venomous power at a very early stage. Those hatched in this Society's rooms last year killed a small Malay python (*P. reticulatus*), which was placed in their cage a few days after they were born. They attacked it at once, biting it viciously across the back. The Python showed great signs of fear, but made no attempt at retaliation. It was at once removed to another cage, but died in about twelve hours. We have, as you see, many specimens of the cobra in our collection, amongst which is a young one preserved in the act of emerging from its egg. In this specimen, the foetal tooth with which the young snake cuts its way out of the strong parchment-like egg, can be clearly seen with a magnifying glass. This foetal tooth is shed as soon as it has served its purpose, and is, in fact, expelled the first time the snake darts out its tongue, which it usually does directly its head appears from the egg. Some of these little cobras thrived for several months on young lizards, but the others would not feed and died in about two months. They measured $7\frac{1}{2}$ inches when born, and were very fat. At the end of the two months they had lost all their plumpness, but had increased their length by nearly $1\frac{1}{2}$ inches. It is very extraordinary that the original nourishment obtained from the egg should be capable of sustaining them for so long a period. The cobra is an exceedingly *timid* snake, but it can be easily tamed with kindness, as you know from the living specimen in the Society's rooms. It is worthy of note that the cobra is about the only poisonous snake which those arrant impostors, the so-called "snake-charmers,"

ever have anything to do with. I never lose an opportunity of fraternizing with these gentlemen in the hope of obtaining specimens we are in want of, but on no occasion have I ever seen any other poisonous snake in their baskets except the cobra. The explanation of this lies, I believe, in the fact that the cobra is the only poisonous snake which can be easily and safely handled. You have only to attract its attention with one hand, while you seize it in the middle of the body with the other, and the snake is yours. It strikes in every direction, *especially at any moving object*, but it never seems to occur to it to turn and bite the hand that is holding it, as almost all other snakes would do at once. The snake-charmers have from time immemorial made great capital out of the knowledge of this simple fact. Their performances with the cobra are known to you all. The snake is taken from the basket, when a slight slap across the back brings it at once into its striking posture. *It is the constant movement of the musical instrument in front of the snake that keeps it erect, and not the noise produced.* Snakes have no external ears, and it is very doubtful whether the cobra hears the music at all. The vipers, which are far less timid, cannot be frightened in this manner, and consequently they are not used for these performances. The snake-men will tell you that the Daboia, the largest viper, or adder, of the East, is a dull snake with no ear for music, and it is interesting to note that they have evidently been repeating this nonsense ever since the time of David—*vile* Psalms LVIII.—“like the deaf adder that stoppeth her ear; which will not hearken to the voice of charmers, charming never so wisely.”

The cobras in the Society's rooms feed freely on young rats, birds and toads.

3. We next come to the Krait (*Bungarus arcuatus*), which is also a very well-known snake. It is exceedingly poisonous, and is common in nearly all-parts of India. We have a number of specimens in our collection from the Bombay Presidency and from Bombay itself. I have lately received two from Malabar Hill. The one contained a “brown tree snake” (*Dipsas gokool*), and the other a Dhâman (*Ptyas mucosus*), so that we have good evidence of its snake-eating propensities. The dark variety of the common and harmless *Lycodon aulicus* is, you will observe, very like the Krait in outward appearance, but you can readily distinguish the Krait by the large hexagonal scales down the centre of the back. The Burmese Krait (*Bungarus fasciatus*), of which we have several

beautiful specimens, is not found, I believe, in any part of this Presidency, although it occurs in parts of Bengal and Lower India.

4. Our fourth poisonous Colubrine land snake is the *Callophis trimaculatus*, which does not possess any popular name that I am aware of. It is a ground snake, and lives chiefly on other small snakes. Dr. Gunther says that the Calamariæ, which they much resemble in appearance, are their principal food. This snake, although so small, is undoubtedly poisonous. We have two specimens, one from the Konkan and the other from Bandora.

5. I have just received a telegram from Mr. G. W. Vidal, C.S., to the effect that the specimen of *Callophis nigrescens*, which he deposited some time ago with the Society, was found by him in Carwar, thus adding another poisonous snake to the list of those found in this Presidency. The upper parts of this snake are black and the lower uniform red. It grows to about four feet in length.

6. We now come to the Viperine snakes, first and foremost of which is the deadly *Daboia elegans*, the Gunus of the natives, known to Europeans in India as the Chain Viper and in Ceylon as the Tic Polonga. It is common in the Island of Bombay, and is, I believe, found in most parts of the Presidency. According to Sir Joseph Fayrer's experiments, the poison of this snake, although very different in its action, is almost, if not quite, as fatal as that of the cobra. It has, as you will observe, exceedingly long fangs and a good supply of spare ones behind ready to take the place of those in front should they be broken. From its sluggish habits, its fierceness, and the great length of its fangs, it is to be dreaded; I think, more than any other snake in this country. Most of the authorities give 50 inches as its length, but we have the head of one killed by Mr. J. C. Anderson, in Hurda, Central Provinces, which was $61\frac{1}{2}$ inches. Judging from the size of the head, and the evidence of the piece of string with which the snake was measured, there is little doubt that the correct length has been stated. Like most of the vipers it is difficult to keep in confinement, but it is very tenacious of life, and has been known to live for a whole year without food. It is an exceedingly handsome snake, especially when young, as you will see from the specimens before you.

7. The only other true viper in this country is the *Echis carinata*, known here as the Phoorsa and in Sind as the Kupper. We have received it from many parts of the Presidency, and in some districts—Rutnagherry for instance—it is found in great numbers. I have

never heard of its being killed in the Island of Bombay, although the harmless "brown tree snake" (*Dipsas gokool*), which somewhat resembles it, is often sent to me as a Phoorsa. You will readily distinguish them, as the head of the *Echis*, like all vipers, is covered with scales, whereas that of the *Dipsas gokool* has plates or shields. Dr. Gunther was, when he issued his book on the Indian Reptiles, under the impression that the bite of this little viper was not absolutely fatal, but it has since been proved that in certain districts the mortality from the Phoorsa is very great.

8. The *Green Tree Viper* (*Trimeresurus anamallensis*) belongs to the family of Crotalidæ, or Pit Vipers, so called from a curious pit or cavity between the nostril and the eye, the use of which is not known. The dreaded rattle-snake of America belongs to the same family. There are eight species of *Trimeresuri* in India, but we have, at present, in our collection, only *T. anamallensis* from the Bombay Presidency. It appears to be common on the Ghauts, as we receive many from Kbandalla, Egutpura and Mahableshtar. Dr. Gunther states that another species, *T. strigatus*, is found in the Deccan, and I hope before long some of our up-country members will be able to send us one in order that we may have specimens of the ten poisonous snakes, which are now known to belong to this Presidency.* It is just possible that an eleventh, *Peltopelorus macrolepis*, may also occur in the Canarese jungles, as it is said to be common a little further south.

9. We now come to *Hynale nepa*, or the Carawala, which was found in Carwar by Mr. G. W. Vidal, C.S. Its head-quarters are in Ceylon, where it is greatly dreaded, but, like so many of the Ceylon fauna, this snake is to be found along the Malabar Coast, but probably not further north than Carwar.

I have to-day only dealt with the poisonous land snakes of this Presidency, but all the true sea-snakes are, as you know, poisonous. I may state that we have at present in our collection specimens of the following species:—

Hydrophis diadema. (Gunther.)

Hydrophis robusta. (Gunther.)

Hydrophis curta. (Gunther.)

Hydrophis aurifasciatus. (Murray.)

* A specimen has since been received from Mr. H. S. Wise, which was killed in Carwar.

- Hydrophis Phipsoni. (Murray.)
 Hydrophis Guntheri. (Murray.)
 Hydrophis Lindsayi. (Gray.)
 Hydrophis chloris. (Daud.)
 Entrydrina bengalensis. (Gray.)
 Pelamis bicolor. (Daud.)

THE INDIAN HEPATICÆ.

BY SURGEON K. R. KIRTIKAR, I. M. D., Fellow Soc. Myc.
 (France), M. R. C. S.

(*Read at the Society's Meeting held on 5th September 1887.*)

ON various former occasions I have brought to the notice of the Society that the subject of Indian Cryptogamia, or flowerless plants, has yet to be investigated; that in exhibiting before the Society, from time to time, my specimens of fungi and algæ growing in and around Bombay, I have failed to derive any assistance from works on Indian Botany; and this I repeat on the present occasion. This fact is borne out by the independent testimony of a distinguished Indian Botanist, Dr. Wellington Gray, whose observations on the Botany of the Bombay Presidency, as embodied in Vol. XXV. of the *Bombay Gazetteer*, recently published, contains the following remark:—He says, "The species belonging to the indigenous flowerless plants have never yet been fully described or investigated, and there are doubtless multitudes of new species still to be discovered. And this is literally true. Take up any book on Indian Botany,—Professor Oliver's "Indian Botany," for instance. Considering that Professor. Oliver has never visited India, and that the book written is from dried Herbaria, and from species of Indian plants growing in England—in the Kew Gardens—the work is admirable. In that book containing nearly four hundred pages, however the Cryptogams are disposed of in twenty pages. No mention is made of the order Hepaticæ, specimens of which are exhibited this evening. In Gregg's text-book of Indian Botany, recently prepared for the Hooghly College in Bengal, a merely passing allusion is made to the order Hepaticæ. In Roxburgh's "Indian Flora," recently edited by Mr. Clarke, there is a chapter added on the miscellaneous Cryptogamia. No mention is made of the Hepaticæ. Now, I do not mention all this to show the magnitude of the result of my researches in that neglected branch of Botany, but rather the magnitude of the difficulties I have had in investigating the subject. I have to depend on my own resources entirely. Considering that one is accustomed to